CLAIMS

1. A drive system, comprising:
an output shaft, which is rotatable about a rotation axis, and from which an output is in use delivered; and
at least one gyroscopic rotor unit, which is operably coupled to the output shaft such as to drive the output shaft on effecting precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft.

2. The drive system of claim 1, wherein the at least one gyroscopic rotor unit comprises a gyroscopic rotor, which, on applying a control force thereto in a plane including the rotation axis of the output shaft, effects precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft.

3. The drive system of claim 2, wherein the at least one gyroscopic rotor unit further comprises a CV coupling, which couples the gyroscopic rotor thereof to the output shaft such as to enable rotation of the gyroscopic rotor on applying a control force thereto in the plane including the rotation axis of the output shaft and effect rotation of the output shaft with precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft.

4. The drive system of claim 3, wherein the CV coupling includes a first coupling member, which is rotatably coupled to the output shaft about a rotation axis orthogonal to the rotation axis of the output shaft, a second coupling member, which is fixed to the gyroscopic rotor, and a coupling element, which couples the first and second coupling members such that the gyroscopic rotor is rotated on rotating the first coupling member.

5. The drive system of claim 4, further comprising:

at least one rotor drive assembly, which is coupled to the first coupling member of the CV coupling such as to provide for rotation of the gyroscopic rotor.

6. The drive system of any of claims 2 to 5, wherein the gyroscopic rotor is configured such as to provide for application of a control force in one of two opposite senses, whereby the application of a control force in one sense effects precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft in one sense, thereby driving the output shaft in the one sense, and the application of a control force in the other sense effects precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft in the other sense, thereby driving the output shaft in the other sense.

7. The drive system of any of claims 2 to 6, further comprising:
a control mechanism, which is operable to apply a control force to the gyroscopic rotor of the at least one gyroscopic rotor unit, and thereby control the output at the output shaft.

8. The drive system of claim 7, wherein the control mechanism comprises a loading body, which is rotatably and slideably disposed about the output shaft, and at least one loading link, which operably couples the loading member to the gyroscopic rotor of the at least one gyroscopic rotor unit, whereby sliding the loading body axially relative to the output shaft acts to apply a control force to the gyroscopic rotor of the at least one gyroscopic rotor unit.

9. The drive system of claim 8, further comprising:
a drive coupling assembly, which rotatably couples the loading body of the loading mechanism to the output shaft such that the loading body of the loading mechanism and the output shaft rotate in unison.

10. The drive system of any of claims 2 to 9, comprising:

first and second gyroscopic rotor units disposed in opposed relation about the output shaft, each comprising a gyroscopic rotor, wherein the gyroscopic rotors are rotated in opposite senses and, on application of a control force to each of the gyroscopic rotors in a plane including the rotation axis of the output shaft, effect precessional rotation of the respective gyroscopic rotor units about the rotation axis of the output shaft.

11. A method of driving an output shaft, the method comprising the steps of:
providing a drive system including an output shaft, which is rotatable about a rotation axis, and at least one gyroscopic rotor unit, which is operably coupled to the output shaft; and
effecting precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft such as to drive the output shaft.

12. The method of claim 11, wherein:
the at least one gyroscopic rotor unit comprises a gyroscopic rotor; and
the step of effecting precessional rotation comprises the step of:
applying a control force to the gyroscopic rotor of the at least one gyroscopic rotor unit in a plane including the rotation axis of the output shaft, which is such as to effect precessional rotation of the at least one gyroscopic rotor unit about the rotation axis of the output shaft.

13. The method of claim 12, wherein:
the drive system comprises first and second gyroscopic rotor units disposed in opposed relation about the output shaft, each comprising a gyroscopic rotor, and the gyroscopic rotors being rotated in opposite senses; and
the step of effecting precessional rotation comprises the step of:

applying a control force to the gyroscopic rotors of the gyroscopic rotor units in a plane including the rotation axis of the output shaft, which is such as to effect precessional rotation of the gyroscopic rotor units about the rotation axis of the output shaft.

14. A CV coupling, comprising:
a first coupling member for coupling to a first body and including a pair of opposed connection elements for providing a pivoting connection about a first pivot axis;
a second coupling member for coupling to a second body and including a pair of oppositely-directed connection elements for providing a pivoting connection about the first pivot axis; and
a coupling element, which couples the first and second coupling members, wherein the coupling element comprises first and second concentric annular members, with the first, outer annular member being pivotally connected to the pair of connection elements on the first coupling member and the second, inner annular member being pivotally connected to the pair of connection elements on the second coupling member, and a pair of opposed connection elements for providing a pivoting connection between the annular members about a second pivot axis, which is orthogonal to the first pivot axis.

15. A CV coupling, comprising:
a first coupling member for coupling to a first body and including a part-spherical cavity and a pair of opposed guide slots;
a second coupling member for coupling to a second body and including a part-spherical cavity and a pair of opposed guide slots; and
a coupling element, which couples the first and second coupling members, wherein the coupling element comprises a spherical body, which is captively disposed in the cavities of the first and second coupling members, a first pair of oppositely-directed guide pins located in the pair of opposed guide slots in the first coupling member, and a second pair of oppositely-directed guide pins,

disposed in orthogonal relationship to the first pair of oppositely-directed guide pins, located in the pair of opposed guide slots in the second coupling member.

16. A drive system substantially as hereinbefore described with reference to the accompanying drawings.

17. A drive method substantially as hereinbefore described with reference to the accompanying drawings.

18. A CV coupling substantially as hereinbefore described with reference to Figures 3(a) to (c) or Figures 4(a) and (b) of the accompanying drawings.